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IS 8953 (2006): 62 percent alumina bricks and blocks for blast furnace [MTD 15: Refractories]

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भारतीय मानक

वात्या भटटीं के लिए 62 प्रतिशत ईंटों और ब्लॉकों की विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

62 PERCENT ALUMINA BRICKS AND BLOCKS FOR BLAST FURNACE — SPECIFICATION

(First Revision)

ICS 81.080

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 2006

Price Group 1

Refractories Sectional Committee, MTD 15

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Refractories Sectional Committee, had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1978. In this standard Table 1 has been modified.

Large quantities of 62 percent alumina refractories are used for lining blast furnace hearth bottoms.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

62 PERCENT ALUMINA BRICKS AND BLOCKS FOR BLAST FURNACE — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard covers the requirements for 62 percent alumina refractory bricks and blocks for use in blast furnace hearth bottoms.

1.2 This standard is not applicable to bricks or blocks whose size is more than 500mm × 200mm × 150mm.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1387 : 1967	General requirements for the supply of metallurgical materials (*first revision*)
1528	Method of sampling and physical tests for refractory materials:
(Part 1) : 1980	Determination of pyrometric cone equivalent (PCE) or softening point (*second revision*)
(Part 2) : 1974	Determination of refractoriness under load (*first revision*)
(Part 4) : 1974	Determination of cold crushing strength (*first revision*)
(Part 6) : 1974	Determination of permanent change after reheating (*first revision*)
(Part 7) : 1974	Methods of sampling and criteria for conformity (*first revision*)
(Part 8) : 1974	Determination of apparent porosity (*first revision*)
(Part 11) : 1993	Determination of warpage (*second revision*)
4041 : 1987	Glossary of terms relating to refractory materials (*first revision*)
12107	Methods of chemical analysis of alumino-silicate refractory materials:
(Part 3) : 1987	Determination of aluminium
(Part 6) : 1987	Determination of iron

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4041 shall apply.

4 SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of material shall conform to IS 1387.

4.2 The refractories shall be compact, of homogeneous texture and free from cracks, voids and other flaws. They shall be burnt evenly throughout, shall have no soft corners and shall have sufficient mechanical strength.

5 ACCEPTABLE LIMITS FOR SURFACE DEFECTS

The maximum permissible limits for surface defects shall be as specified below:

a) *Chipped corners and edges* — The depth shall exceed 10 mm. In the case of ribs, the chipped length shall not exceed 30 mm.

b) *Cracks* — Hair cracks up to a width of 0.25 mm and not forming network all over the surface of the refractories shall be acceptable irrespective of the number of such cracks. No crack of any size crossing any of the edge shall be acceptable. Hair cracks of width more than 0.25 mm and up to 0.5 mm are allowed provided their length does not exceed 15 mm. Cracks of over 0.5 mm width are not allowed.

c) *Slag patches*, are not allowed.

d) *Melted holes* — Melt holes due to iron and alkalis should not have a diameter larger than 5 mm.

6 DIMENSIONS AND TOLERANCES

6.1 Dimensions and its tolerances shall be as agreed to between the purchaser and the supplier.

6.2 Warpage

Warpage of the bricks and blocks when determined in accordance with IS 1528 (Part 11) shall not exceed 0.75 mm.

7 CHEMICAL AND PHYSICAL REQUIREMENTS

The refractories shall comply with the chemical and physical requirements specified in Table 1.

8 SAMPLING AND CRITERIA FOR CONFORMITY

For sampling of products and for judging the conformity of the product to this specification, the procedure given in IS 1528 (Part 7) shall be followed.

9 MARKING

9.1 Each brick or block shall be clearly marked with the manufacturer name or trade-mark.

9.2 BIS Certification Marking

The refractory bricks may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 1986 and Rules and Regulations made thereunder. The details of condition under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Table 1 Physical and Chemical Requirements

(*Clause* 7)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS (4)
i)	Al_2O_3, percent, *Min*	62	12107 (Part 3)
ii)	Fe_2O_3, percent, *Max*	1.5	12107 (Part 6)
iii)	Refractories under load (ta), 4 kg/cm^2	1 500	1528 (Part 2)
iv)	Pyrometric cone equivalent, *Min*	1 800°C	1528 (Part 1)
v)	Cold crushing strength, kg/cm^2, *Min*	600	1528 (Part 4)
vi)	Apparent porosity, percent, *Max*	16	1528 (Part 8)
vii)	Permanent linear change after reheating for 2 h at 1 500°C, percent, *Max*	± 0.2	1528 (Part 6)

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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